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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/582,230	07/21/2000	Takayoshi Hiraga	0670-248	1846

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EXAMINER

CHANG, AUDREY Y

ART UNIT	PAPER NUMBER
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2872

DATE MAILED: 01/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/582,230

Applicant(s)

HIRAGA ET AL.

Examiner

Audrey Y. Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 November 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 3-5 and 11-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 3-5 and 11-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 9.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on *November 6, 2002* has been entered.
2. This Office Action is also in response to applicant's amendment filed on August 22, 2002, which has been entered as paper number 11.
3. By this amendment, the applicant has amended claims 3-5 and 11-13 and has canceled claims 17-19. Claims 3-5 and 11-13 remain pending in this application.
4. The rejection to claims 3 and 11-13 under 35 USC 112, second paragraph, set forth in the previous Office Action dated August 13, 2001, are *withdrawn* in response to applicant's amendment.

Specification

5. A preliminary examination of this application reveals that it includes terminology which is so different from that which is generally accepted in the art to which this invention pertains that a proper search of the prior art cannot be made. For example: the term "*non-diffraction hologram pattern*". The applicant is respectfully advised that there is not such thing as "*non-diffraction hologram pattern*", since **by definition** hologram pattern is designed to diffract light. A pattern that does not diffract light cannot be identified as hologram pattern, it is just a pattern. Applicant argues, *in the remark*, that the term is sufficiently clear and would be understood, *in view of full disclosure of the specification*, to refer to a *hologram pattern for non-diffracted light*. The Examiner disagrees for the reasons stated below. *Firstly*, a hologram pattern is designed to diffract any incident light beam, whether the incident light beam is

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resulted from a diffraction before or not, i.e. a diffracted light or a non-diffracted light. The specification *fails* to teach how could the hologram pattern have the ability to tell if the incident beam is a diffracted light or a non-diffracted light. *Secondly*, it is not clear if the phrase “for a non-diffracted light” means the light after passing through the hologram is “non-diffracted”, if such is referred here, then such phenomenon *contradicts* to the definition of the hologram. Thirdly, the term as *in view of full disclosure of the specification* is **not** well defined and **does not** support the idea of “*hologram pattern for non-diffracted light*”. In page 11, lines 18-21, the specification discloses “light from the real light source 11 transmits through the non-diffraction hologram pattern 14 without diffraction”, yet in page 13, lines 16-20, the specification states that “the non-diffraction hologram pattern 14 ... may be an amplitude hologram pattern with ... interference fringes or a phase hologram pattern with binary or blazed grooves formed on glass or the like”. On pages 18-19, the specification *explicitly* states that the non-diffraction hologram pattern 14 is a *phase hologram* that *diffracts* light as the light transmits through the pattern. Such effect also demonstrated in Figures 6A to 6C. The specification therefore contains *contradicting* statements and disclosure as referring to define the term “non-diffraction hologram pattern”. The applicant is respectfully advised to study the textbook of holography to correct the terminology appropriately in order to make the application proper.

Applicant is required to provide a clarification of these matters or correlation with **art-accepted terminology** so that a proper comparison with the prior art can be made. Applicant should be careful not to introduce any new matter into the disclosure (i.e., matter which is not supported by the disclosure as originally filed).

Response to Amendment

6. The amendment filed on August 22, 2002 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original

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disclosure is as follows: **claims 3, 4, 11, 12 and 13 have been amended** to include the phrase “*hologram patterns for diffracted light*”. The specification fails to give support for the light enters or incidents on the hologram patterns are “diffracted light”. The incident light generated by the laser light source, as disclosed in the specification, is not diffracted in any way before it enters the hologram, (please see Figure 1).

Claim 3 has been amended to include the feature “hologram patterns ..., determined so that diffraction is given an inverse aberration of an aberration to be caused by the hologram member”, wherein such statement is *not* supported by the specification. The specification disclosed specifically that the aberrations are caused by the optical system, not the hologram member, (please see pages 4 to 5 of the specification). The hologram member gives the inverse aberrations to the other optical elements and it cannot give inverse aberration of itself, because the if there is any aberration of the holographic member such aberration will only be introduced when light passes through it.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. **Claims 3-4, and 11-13 are rejected under 35 U.S.C. 112, first paragraph**, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The reasons for rejection based on the newly added matters are set forth in the paragraph above.

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9. Claims 4, 5, 12 and 13 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The specification fails to disclose light spot is formed by non-diffraction light and “a hologram pattern for non-diffracted light which provides a uniform intensity of the servo light spot” as recited in claims 4 and 5. Figures 6A to 6C, specifically state that the intensity of the light from the laser light source is not uniform, where the uniformity is formed by reducing the intensity of zero order diffraction beam from the hologram pattern and increasing the intensity of first order *diffracted* beam from the hologram pattern.

Claims 12 and 13 inherit the rejection from their based claim.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claim 5 is rejected under 35 U.S.C. 102(b) as being anticipated by the patent issued to Hekker (PN. 5,450,378).

Hekker teaches an optical recording/reading system that is comprised of a *real laser light source* (106, Figure 5), a *holographic optical element* (103), serves as the *hologram member*, and a second *holographic optical element* (104), serves as the *light spot forming optical element*, for receiving the light generated by the light source via the hologram member to *form light spot on a disc* (45), serves as the recording medium. Hekker teaches that the holographic optical element or the hologram member is

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designed so the intensity of the light spot formed is uniform, (please column 13, lines 34-41). This reference has anticipated the claim.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. **Claims 3-4 and 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Takeda et al (PN. 5,828,643) in view of the patent issued to Onayama et al (PN. 5,016,954) and Yamagata et al (PN. 5,473,471).**

Takeda et al teaches an optical pickup head apparatus that is comprised of a *single real laser light source* (11, Figures 1 or 15), a *holographic optical element* (12 or 22) serves as the hologram member for diffracting the light emitted from the light source and an *objective lens* (14) for focusing the light to form a plurality of light spots on a *laser disk* (15) serves as the recording medium, (please see Figures 1 and 15). Takeda et al teaches that the holographic optical element (12 or 22) has a plurality of diffraction grating patterns (12A, 12B or 22A, 22B, 22C) such that the light generated from the real light source is diffracted into different diffraction orders such that the different diffraction order beams appeared to be generated by a *plurality of virtual light sources* (A₊, A₋, B₊, B₋ as in Figure 2, column 4). The laser light source is a semiconductor laser light source.

This reference has met all the limitations of the claims with the exception that it does not teach explicitly that the diffraction grating patterns are designed to correct the aberrations of the optical elements in the optical pickup device. (The *amendment to claim 3* states that the aberrations are caused

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by the hologram member itself is not supported by the specification and it is not possible, see reasons for rejection in paragraphs above). However designing and recording holographic optical element having diffraction grating to correct aberrations of other optical elements in the device are extremely well known and standard practice in the art to modify the holographic optical element of Takeda et al to also correct the aberrations would have been obvious to one having ordinary skill in the art.

Claim 3 has been amended to include the feature that optical pickup further comprises a *collimator lens*. The Takeda reference does not teach such explicitly however it is rather standard practice in the art to use a collimator lens in an optical pickup for the purpose of generating collimating light beams to illuminating the recording medium and forming the beam spots as demonstrated by the teachings of Onayama et al. **Onayama** et al teaches an optical pickup that is comprised of a diffraction grating for splitting the light beam generated by a real light source (O, Figure 1) to three beams with two of the beams appear as been generated by two virtual light sources, (X and Y), wherein an collimator lens (4) is used to collimated the light beams before it is converged to form beam spots on the recording medium, (please see Figure 1). It would then have been obvious to one skilled in the art to apply the teachings of Onayama et al to include a collimator lens in the optical pickup of Takeda et al for the benefit of collimating the light beams so that they form more uniform spots on the recording medium.

Takeda et al teaches that the non-diffracted light (such as zero order diffraction light) and first order diffracted light by the holographic element forming light spots on the disk or recording medium, (Figure 2). But is does not teach explicitly that the intensity of diffracted light not used for forming light spots is reduced and the reduced amount is added to the intensity for the light spot formation. **Yamagata** et al in the same field of endeavor teaches specific designs of diffraction lens such that by varying groove sizes the intensity ratio between the diffraction light (such as first order light) and the zero order light may be adjusted and changed. It would then have been obvious to one skilled in the art to apply the teachings of Yamagata et al to modify the holographic element of Takeda et al for the benefit of adjusting the

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intensity of the light beam diffracted by the holographic element for the benefit of increasing the intensity level of the light spots formed and to maximize the utility of the light beam. With regard to claim 4, it is implicitly true or an obvious modification to one skilled in the art that the intensity of the light spot can be made uniform by changing the groove design of the holographic element as taught by Yamagata et al so that the intensity of the light forming the light spot is more uniform which gives better beam quality to illuminate the disk.

With regard to claim 11, these references do not teach explicitly that the holographic element has curved fringes pattern. However since the holographic elements of Takeda et al achieves the same functions, namely splitting the light beam, as the instant application and the specification fails to teach the criticality of having such fringes pattern would overcome any problem in the prior art such modification is therefore considered as obvious matters of design choice to one skilled in the art.

Response to Arguments

14. Applicant's arguments filed on August 22, 2002 have been fully considered but they are not persuasive. The newly amended claims have been fully considered and they are rejected for the reasons stated above.

15. Applicant's arguments have been fully addressed in the paragraphs above.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 703-305-6208. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

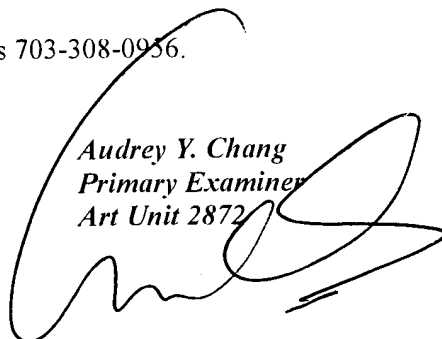
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on 703-308-1637. The fax phone numbers for the organization where

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this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Audrey Y. Chang
Primary Examiner
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A large, stylized handwritten signature in black ink, consisting of a large loop at the top and a series of smaller loops and strokes below, extending to the right and slightly downwards.

A. Chang, Ph.D.
January 9, 2003